Bowdoin College	**)**	**Departmental**
Cumberland County	**)**	**Findings of Fact and Order**
Brunswick, Maine	**)**	**Air Emission License**
A-76-71-G-R	**)**	

After review of the air emission license renewal application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A., Section 344 and Section 590, the Department finds the following facts:

I. REGISTRATION

A. Introduction

Bowdoin College of Brunswick, Maine has applied to renew their air emission license. The application addresses the operation of currently licensed emission sources associated with their educational facility, including three oil fired boilers.

B. Emission Equipment

This license addresses the following air emission units:

Boilers

Equipment	Maximum Capacity (MMBtu/hr)	Fuel Type, %Sulfur	Max.Firing Rate (i.e. gal/hr)	Stack #
Boiler 1	45.1	#6 oil, 0.5%	300	1
Boiler 2	29.3	#6 oil, 0.5%	195	1
Boiler 4	48.6	#6 oil, 0.5%	324	1

Hot Water Heaters

Location	Maximum Capacity (MMBtu/hr)	Fuel Type
Moulton Union	1.223	Propane
Wentworth Hall	1.253	Propane
Sargeants Gym	1.266	Propane
Smith Union	2.448	Propane
Farley Field House	2.3	Propane

Diesel Generator

Power Output	Firing Rate	Max. Input Capacity
135 kW	9.25 gal/hr	1.267 MMBtu/hr

C. Application Classification

The application for Bowdoin College does not include the licensing of increased emissions or the installation of new or modified equipment, therefore the license is considered to be a renewal of current licensed emission units only.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license the applicant must control emissions from each unit to a level considered by the Department to represent best practical treatment (BPT), as defined in Chapter 100 of the Air Regulations. Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for existing emissions equipment means that method which controls or reduces emissions to the lowest possible level considering:

- the existing state of technology;
- the effectiveness of available alternatives for reducing emissions from the source being considered; and
- the economic feasibility for the type of establishment involved.

B. Boilers

1. Boilers 1 and 4

Boiler 1 is a B & W water-tube boiler with a rated heat input capacity of 45.1 MMBtu/hr. Boiler 4 is also a B & W water-tube boiler and is rated at 48.6 MMBtu/hr. The boilers fire #6 fuel oil with a maximum sulfur content of 0.5%. These boilers are not subject to 40 CFR Part 60, Subpart Dc.

BPT Findings
Boilers 1 and 4 shall meet the following BPT emission limits:

PM/PM_{10} – 0.2 lb/MMBtu
SO_2 - combustion of 0.5% sulfur #6 fuel oil
NO_X – 0.5 lb/MMBtu
CO - good combustion, 2 lb/hr
VOC - good combustion, 0.5 lb/hr

The BPT findings were based on previous emission limits calculated from AP-42 factors (Table 1.3-1), Chapter 103 of the Bureau of Air Quality regulations for particulate matter, the use of oxygen trim control on each boiler to minimize emissions and improve efficiency, and proper combustion and maintenance practices when in operation.

2. Boiler 2
Boiler 2, the newest unit, was licensed in February 1996 and is subject to EPA New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart Dc. Boiler 2 is a Cleaver-Brooks fire-tube boiler rated at 29.3 MMBtu/hr, firing #6 fuel oil with a maximum sulfur content of 0.5%.

BPT Findings
Bowdoin College shall meet the following BPT emission limits for Boiler 2:

PM/PM_{10} – 0.12 lb/MMBtu
SO_2 - combustion of 0.5% sulfur #6 fuel oil
NO_X – 0.5 lb/MMBtu
CO - good combustion, 2 lb/hr
VOC - good combustion, 0.3 lb/hr

The BPT findings were based on previous BACT limits, AP-42 factors (Table 1.3-1), Chapter 103 of the Bureau of Air Quality regulations for particulate matter, the use of oxygen trim control on each boiler to minimize emissions and improve efficiency, and proper combustion and maintenance practices when in operation.

3. Boilers' Fuel Limit
The boilers shall have a combined fuel limit of 900,000 gal/year of #6 oil, with a maximum fuel sulfur content not to exceed 0.5% by weight.

4. Specification Waste Oil
Bowdoin College may burn up to 500 gallons/year of specification waste oil in the boilers, based on a 12 month rolling total. The oil must meet the definition of specification waste oil which includes the following:

Constituent/Property	Allowable Level
Arsenic	5.0 ppm maximum
Cadmium	2.0 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Polychlorinated Biphenyls (PCBs)	10 ppm maximum
Total Halogens	1000 ppm maximum
Flash Point	100°F minimum

The results of an analysis of the specification waste oil generated on site was submitted as part of a previous license application. The Department may request additional testing in the future, if deemed necessary

5. Opacity from Stack 1
   The three boilers exhaust into one stack. Visible emissions shall not exceed 30% opacity on a 6 minute block average, except for no more than 2 six minute block averages in any continuous 3-hour period when boilers 1 and 4 are operating either in conjunction with boiler 2 or alone. When only boiler 2 is operating, visible emissions shall not exceed 20% opacity on a 6 minute block average, except for no more than 2 six minute block averages in any continuous 3-hour period.

C. Hot Water Heaters
Bowdoin College has several propane hot water heaters; five are required to be included in the air emission license. The hot water heaters are primarily used in the summer months when the boilers are not operating. The capacity of the five licensed hot water heaters range from 1.223 to 2.448 MMBtu/hr. Bowdoin College shall be limited to 100,000 gal/year of propane. Visible emissions from each of the propane hot water heaters shall not exceed 10% opacity on a 6 minute block average basis.

D. Emergency Generator
The emergency generator is a Kohler unit, rated at 135 KW. The generator shall fire 0.05% sulfur oil and shall be limited to 500 hours/year based on a 12 month rolling total. Annual emission limits were based on AP-42 factors, Table 3.3-2. Visible emissions from the emergency generator shall not exceed 30% opacity on a 6 minute block average basis, except for no more than 2 six minute block averages in a continuous 3-hour period.

E. Annual Emission Restrictions

Bowdoin College is limited to 900,000 gallons per year of #6 fuel oil with a maximum sulfur content not to exceed 0.5% by weight for the main boilers. Bowdoin College is also limited to 100,000 gallons per year of propane and 500 hours of operation for the diesel generator. Emissions from the three oil fired boilers, propane fired units, and generator shall not exceed the following, based on a 12 month rolling total:

Total Allowable Annual Emissions for the Facility
(used to calculate the annual license fee)

Pollutant	TPY
PM	13.6
PM_{10}	13.6
SO_2	35.4
NO_X	35.9
CO	2.7
VOC	0.3

III. AMBIENT AIR QUALITY ANALYSIS

According to the Maine Regulations Chapter 115, the level of air quality analyses required for a renewal source shall be determined on a case-by-case basis. The licensed emissions from Bowdoin College are below the emissions levels required for modeling and monitoring.

ORDER

Based on the above Findings and subject to conditions listed below the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants air emission license A-76-71-G-R, subject to the following conditions:

(1) Employees and authorized representatives of the Department shall be allowed access to the licensee's premises during business hours, or any time during which any emissions units are in operation, and at such other times as the Department deems necessary for the purpose of performing tests, collecting samples, conducting inspections, or examining and copying records relating to emissions.

(2) The licensee shall acquire a new or amended air emission license prior to commencing construction of a modification, unless specifically provided for in Chapter 115.

(3) Approval to construct shall become invalid if the source has not commenced construction within eighteen (18) months after receipt of such approval or if construction is discontinued for a period of eighteen (18) months or more. The Department may extend this time period upon a satisfactory showing that an extension is justified, but may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both.

(4) The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request.

(5) The licensee shall pay the annual air emission license fee to the Department, calculated pursuant to Title 38 MRSA §353.

(6) The license does not convey any property rights of any sort, or any exclusive privilege.

(7) The licensee shall maintain and operate all emission units and air pollution control systems required by the air emission license in a manner consistent with good air pollution control practice for minimizing emissions.

(8) The licensee shall maintain sufficient records, to accurately document compliance with emission standards and license conditions and shall maintain such records for a minimum of six (6) years. The records shall be submitted to the Department upon written request.

(9) The licensee shall comply with all terms and conditions of the air emission license. The filing of an appeal by the licensee, the notification of planned changes or anticipated noncompliance by the licensee, or the filing of an application by the licensee for the renewal of a license or amendment shall not stay any condition of the license.

(10) The licensee may not use as a defense in an enforcement action that the disruption, cessation, or reduction of licensed operations would have been necessary in order to maintain compliance with the conditions of the air emission license.

(11) In accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department, the licensee shall:

(i) perform stack testing to demonstrate compliance with the applicable emission standards under circumstances representative of the facility's normal process and operating conditions:

a. within sixty (60) calendar days of receipt of a notification to test from the Department or EPA, if visible emissions, equipment operating parameters, staff inspection, air monitoring or other cause indicate to the Department that equipment may be operating out of compliance with emission standards or license conditions; or
b. pursuant to any other requirement of this license to perform stack testing.

(ii) install or make provisions to install test ports that meet the criteria of 40 CFR Part 60, Appendix A, and test platforms, if necessary, and other accommodations necessary to allow emission testing; and

(iii) submit a written report to the Department within thirty (30) days from date of test completion.

(12) If the results of a stack test performed under circumstances representative of the facility's normal process and operating conditions indicate emissions in excess of the applicable standards, then:

(i) within thirty (30) days following receipt of such test results, the licensee shall re-test the non-complying emission source under circumstances representative of the facility's normal process and operating conditions and in accordance with the Department's air emission compliance test protocol and 40 CFR Part 60 or other method approved or required by the Department; and

(ii) the days of violation shall be presumed to include the date of stack test and each and every day of operation thereafter until compliance is demonstrated under normal and representative process and operating conditions, except to the extent that the facility can prove to the satisfaction of the Department that there were intervening days during which no violation occurred or that the violation was not continuing in nature; and

(iii) the licensee may, upon the approval of the Department following the successful demonstration of compliance at alternative load conditions, operate under such alternative load conditions on an interim basis prior to a demonstration of compliance under normal and representative process and operating conditions.

(13) Notwithstanding any other provision in the State Implementation Plan approved by the EPA or Section 114(a) of the CAA, any credible evidence may be used for the purpose of establishing whether a person has violated or is in violation of any statute, regulation, or Part 70 license requirement.

(14) The licensee shall maintain records of malfunctions, failures, downtime, and any other similar change in operation of air pollution control systems or the emissions unit itself that would affect emissions and that is not consistent with the terms and conditions of the air emission license. The licensee shall notify the Department within two (2) days or the next state working day, whichever is later, of such occasions where such changes result in an increase of emissions. The licensee shall report all excess emissions in the units of the applicable emission limitation.

(15) Upon written request of the Department, the licensee shall establish and maintain such records, make such reports, install, use and maintain such monitoring equipment, sample such emissions (in accordance with such methods, at such locations, at such intervals, and in such manner as the Department shall prescribe), and provide other information as the Department may reasonably require to determine the licensee's compliance status.

SPECIFIC CONDITIONS

(16) **Boiler 1**

A. Boiler 1 (rated at 45.1 MMBtu/hr) shall fire #6 fuel oil with a maximum sulfur content of 0.5% by weight.

B. Emissions from Boiler 1 shall not exceed the following:

Boiler 1 Emission Limits

Pollutant	lb/MMBtu	lb/hr
PM	0.2	9.0
PM_{10}	0.2	9.0
SO_2	---	23.5
NO_X	0.5	22.6
CO	---	2.0
VOC	---	0.5

(17) **Boiler 2**

A. Boiler 2 (rated at 29.3 MMBtu/hr) shall fire #6 fuel oil with a maximum sulfur content of 0.5% by weight.

B. Emissions from Boiler 2 shall not exceed the following:

Boiler 2 Emission Limits

Pollutant	lb/MMBtu	lb/hr
PM	0.12	3.5
PM_{10}	0.12	3.5
SO_2	---	15.2
NO_X	0.5	14.7
CO	---	2.0
VOC	---	0.3

C. Bowdoin College shall comply with the notification and reporting requirements of Federal New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart Dc. As part of the reporting requirements, a copy of the sulfur content reports shall be sent to the Department.

(18) **Boiler 4**

A. Boiler 4 (rated at 48.6 MMBtu/hr) shall fire #6 fuel oil with a maximum sulfur content of 0.5% by weight.

B. Emissions from Boiler 4 shall not exceed the following:

Boiler 4 Emission Limits

Pollutant	lb/MMBtu	lb/hr
PM	0.2	9.7
PM_{10}	0.2	9.7
SO_2	---	25.3
NO_X	0.5	24.3
CO	---	2.0
VOC	---	0.5

(19) **Boilers' Stack Opacity**

A. When boiler 1 and/or boiler 4 is operating either in conjunction with boiler 2 or alone, visible emissions from the boilers' stack shall not exceed 30% opacity on a 6 minute block average basis, except for no more than 2 six minute block averages in any continuous 3-hour period.

B. When boiler 2 is operating alone, visible emissions from the boilers' stack shall not exceed 20% opacity on a 6 minute block average basis, except for no more than 2 six minute block averages in any continuous 3-hour period.

(20) **Boilers' Fuel**

A. The annual use of #6 fuel oil in the boilers shall be limited to 900,000 gallons/year, on a 12 month rolling basis. The sulfur content shall not exceed 0.5% sulfur. Fuel records shall be kept documenting the amount of fuel fired, on a monthly and 12 month rolling total basis, and the sulfur content of the fuel.

B. Bowdoin College may combust up to a total of 500 gallons/year of specification waste oil generated on site, based on a 12 month rolling total. Bowdoin College shall maintain records of the amount of specification waste oil burned in the boilers.

(21) **Hot Water Heaters**

A. Bowdoin College may operate the five propane fired water heaters rated above 1 MMBtu/hr. Visible emissions from each of the propane units shall not exceed 10% opacity on a six minute block average basis.

B. Bowdoin College shall be limited to a 100,000 gallon/year propane limit, based on a 12 month rolling total. Bowdoin College shall keep a log of propane fuel use for the facility. The log shall contain monthly fuel use and the 12 month rolling total. The log shall be made available to the Department upon request.

C. The propane hot water heaters shall not exceed the following emission limits, based on a 12 month rolling total:

Total Emissions from Propane Fired Units

Pollutant	Tons/year
PM	0.02
PM_{10}	0.02
SO_2	0.001 (negl.)
NO_X	0.7
CO	0.1
VOC	0.03

(22) **Emergency Diesel Generator**

A. The emergency diesel generator shall be limited to 500 hours per year, based on a 12 month rolling total. An hour meter shall be used to document generator operation.

B. The fuel fired in the diesel generator shall not exceed 0.05% sulfur by weight.

C. The diesel generator shall not exceed the following emission limits, based on a 12 month rolling total:

Total Emissions from the Diesel Generator

Pollutant	Tons/year
PM	0.1
PM_{10}	0.1
SO_2	0.09
NO_X	1.4
CO	0.3
VOC	0.11

D. Visible emissions from the emergency generator shall not exceed 30% opacity on a 6 minute block average basis, except for no more than 2 six minute block averages in a continuous 3-hour period.

(23) **Facility Emissions**
Facility emissions shall be limited to the following, based on a 12 month rolling total:

Pollutant	Tons/yr
PM	13.6
PM_{10}	13.6
NO_X	35.9
SO_2	35.4
CO	2.7
VOC	0.3

(24) The term of this order shall be for five (5) years from the signature date below.

DONE AND DATED IN AUGUSTA, MAINE THIS DAY OF 1999.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____
EDWARD O. SULLIVAN, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: November 9, 1998
Date of application acceptance: November 16, 1998

Date filed with Board of Environmental Protection:_____

This order prepared by Kathleen E. Neil , Bureau of Air Quality.